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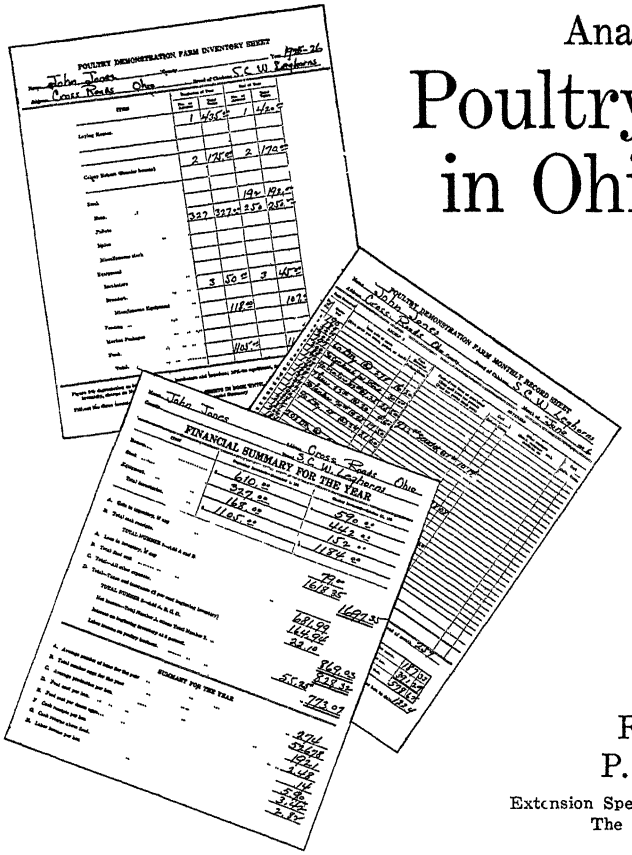

Analysis of
Poultry Profits in Ohio, 1926

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THE gradual but steady increase in importance of poultry in the farming program of the country may be attributed to the efficiency of the hen as a producing unit. History shows that as agriculture becomes more intensive the smaller types of farm animals drive out the larger types. The chicken, because it is adapted to intensive conditions, is the only farm animal that increases faster than the human population. Cattle, sheep, and swine have decreased in proportion to the population during the past twenty years, while poultry has increased 20 per cent.

The success of the individual poultryman, like the success of the individual in any line of business, depends very largely on his efficiency. The mere fact that Ohio is located in a strategical position as a poultry state, with all of the advantages of the low cost of feed in the corn belt states plus the advantages of the high priced markets of the industrial section of the country, can not insure the Ohio poultryman success.

The only data available on the poultry business of Ohio indicate that the average farmer makes little or nothing on his poultry, while the efficient poultryman is netting a fine return. It is not hard to realize that this is the actual condition, for the census shows that the average egg production in Ohio is around 70 eggs per bird, while the 543 poultry cost account records summarized in this bulletin show an average production of 144.7 eggs per bird.

The keeping of cost account records enables one to analyze his business, to determine the relative importance of the various factors responsible for the results obtained, and to make improvements and corrections that will increase the efficiency and profits.

Failure may be the result of not knowing the factors responsible for success, or it may be the result of not being able to put knowledge to use after it is acquired.

THE SUMMARY OF 543 POULTRY DEMONSTRATION FARM RECORDS

This bulletin aims to summarize the results secured from poultry on 543 Ohio farms as shown by the cost account records kept in cooperation with the County Agents and the Poultry Extension Department of the Ohio State University. These records are from practically every county in the state, and the summary should give a good idea of the better type of poultry enterprise in Ohio.

The poultrymen of other sections of the country are beginning to realize the good markets afforded by the larger cities and the industrial and mining centers of Ohio, and are shipping in eggs to compete with the Ohio poultryman on his own market. Competition in the poultry business is becoming keener every year. To successfully meet this condition the Ohio poultryman will be compelled to adopt the most efficient methods of production.

If the Ohio poultryman will develop efficiency in production equal to other sections of the country, his advantage of location with respect to both feed cost and close proximity to good markets will put him in a unique and enviable position in the poultry world.

It is hoped that this bulletin will bring out facts that will point the way to greater efficiency in poultry production.

FACTS ABOUT THE POULTRY DEMONSTRATION FARMS

The 543 flock owners who completed their records for the year 1926 sold $794,089.84 worth of poultry products, and received a net income above all expenses (including depreciation, insurance, taxes, and interest on investment) of $392,333.02. These 543 flocks produced over 140 carloads of eggs, or enough eggs to supply the egg requirements of a city of 100,000 people with a per capita consumption of 200 eggs a year. It would take a train of 36 cars to transport the hens represented in this summary, and a house 20 feet wide and 6 miles long to accommodate them. Table 1 gives complete data.

The volume of business represented on these 543 farms when combined reaches astonishing proportions, but remember, this represents only 543 farms

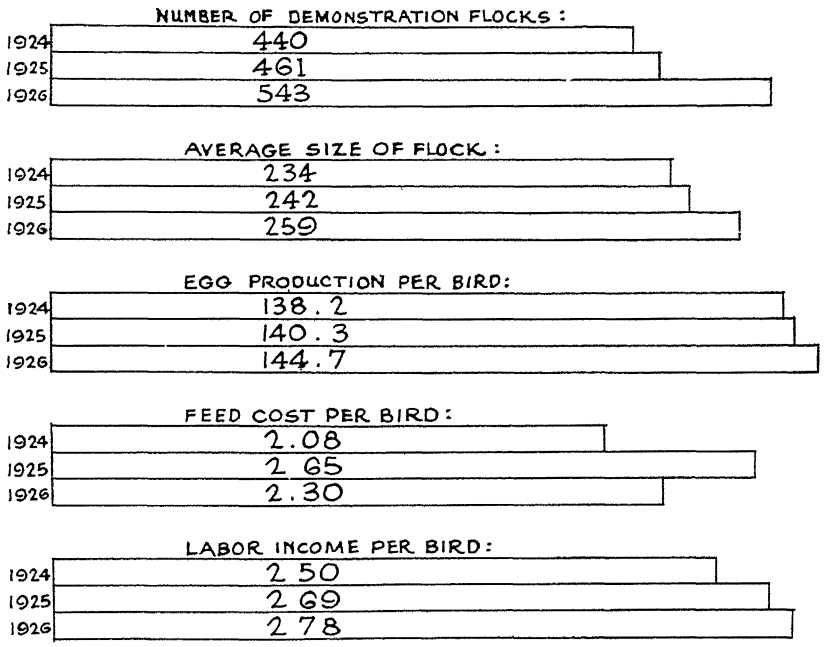

CHART I

and that Ohio has over 250,000 farms. The sooner the poultryman realizes that the income from poultry in the United States is exceeded only by the income from dairy products, corn, cotton, hay, swine, and vegetables, and the sooner he sticks out his chest and boasts rather than admits he is a poultryman, the sooner the hen will attain the prestige she rightfully deserves.

AVERAGES OF THE 543 DEMONSTRATION FARMS

The averages shown in Table 2 give a good idea of what the better poultrymen of Ohio have been doing in a business way during the past three years. This table should contain a lot of valuable information for the beginner who desires to know the possibilities of poultry, for the poultryman who desires to increase his poultry profits, and for the Demonstration Farm owner who wishes to compare his record with the averages for the state.

TABLE 1.—*General Data Concerning 543 Ohio Poultry Demonstration Farms*

ITEM	1926	1925	1924
Number of flocks	543	461	440
Average number of hens	140,887	111,613	103,167
Number of hens at beginning of year	178,629	138,293	129,658
Number of hens at end of year	73,210	56,966	60,506
Per cent reduction in size of flock	59	58.8	53.4
Number of eggs (based on flock averages)	20,386,349	15,659,304	14,258,112
Number of dozens	1,698,862	1,304,942	1,188,176
Cash receipts	$ 794,089.84	$ 653,028.90	$ 535,981.26
Total expenses	459,423.89	394,740.02	325,379.90
Feed cost	323,359.59	296,037.96	214,836.97
Cash return above feed cost	470,730.25	356,990.94	321,144.29
Labor income	392,333.02	300,568.72	258,236.52
Investment	550,698.88	419,800.43	377,619.49
Mortality of hens	19,856	14,243	13,922
No. hens sold or consumed on farm	85,563	67,084	55,234

TABLE 2.—*Poultry Data Averages Concerning 543 Demonstration Farms*

ITEM	1926	1925	1924
Number of flocks	543	461	440
Average number of hens per flock for year	259	242	234
Average number of hens per flock at beginning of year	329	300	294
Average number of hens per flock at end of year	135	124	137
Per cent reduction in size of flock	59	58.8	53.4
Egg production per hen (based on flock averages)	144.7	140.3	138.2
Cash receipts per hen	$ 5.64	$ 5.85	$ 5.19
Total expenses per hen	3.26	3.54	3.15
Feed cost per hen (includes cost of rearing young)	2.30	2.65	2.08
Cash returns per hen above feed	3.34	3.20	3.11
Labor income per hen			
a. Based on number of hens at beginning of year	2.20	2.17	1.99
b. Based on average number of hens for year	2.78	2.69	2.50
Investment per hen	3.08	3.04	2.91
Per cent mortality per flock	11.1	10.3	10.7
Number of hens consumed or sold per flock	158	145	125
Feed cost per dozen eggs (includes cost of rearing young)	$ 0.191	$ 0.227	$ 0.181
Total cost per dozen eggs (includes all expenses except labor)	0.27	0.302	0.274
Per cent feed cost of total expense	70.5	74.9	66.3

Chart I shows very clearly the increase in the number of cooperators completing the records for the year, and indicates the increased desire of people to know more about the details of their business. Likewise the average size of the flock has increased as the flock owners found it profitable and possible.

The egg production per bird, the biggest factor in determining profits, has shown a steady increase from year to year. This result is to be expected, for as the flock owner gets more experience and adopts better methods of feeding, housing, breeding, rearing, management, etc., his results should show correspondingly greater efficiency. The very fact that during the past year the reduction in size of flocks was only 0.2% higher while the egg production increased 4.4 eggs per bird indicates greater efficiency (see Table 2).

Due to lower egg prices the past year the receipts per bird dropped 21 cents, but the lower feed prices reduced the feed cost 35 cents and the total expense 28 cents, so that the resulting labor income reached a new peak.

The one discouraging factor shown in the summary is the increase in the percentage of mortality, but this fact stresses the need of disease prevention such as the program outlined in the "Grow Healthy Chicks" project.

As a result of the lowered feed costs this item decreased in importance and only represents 70.5% of the total expense as compared with 74.9% in 1925.

More hens were sold per flock than ever before, probably as a result of lower egg prices which resulted in closer culling on the part of the producer.

EGG PRODUCTION

In the following analysis and charts the flocks have been grouped into two classes, namely, the Leghorns, and the American breeds composed of Plymouth Rocks, Rhode Island Reds, and Wyandottes.

This classification was made in order to compare the eggs type birds with the egg and meat type birds in all the various factors studied in this analysis. In both groups the flocks have been subdivided into four groups, those above 180 eggs per bird, those between 140 and 180, those between 100 and 140, and those below 100 eggs per bird.

Relation of Egg Production to Cash Receipts and Expenses

Chart II gives a rather complete analysis of the fundamental things which determine the profitableness of the farm poultry flock. They are Receipts and Expenses. It is the balance between these two items that shows whether or not the flock is on a paying basis.

This chart shows that as the egg production increases cash receipts also increase. This would be expected when we consider the fact that egg receipts constitute by far the largest part of the poultry income, and that the other sources of income such as sale of cull hens, broilers, and breeding stock remain about the same regardless of egg production.

Total expense also increased as egg production increased. This is partly due to the fact that feed costs make up 70 percent of the total expense, and feed cost increased with an increased egg production. A complete analysis of the records show that expenses other than feed also increased with a greater egg production.

The poultryman should not worry about expense so long as it results in higher egg production and more profit. The owners of the Leghorn flocks which produced 180 or more eggs per hen had $2.51 more expense per bird than did those owners who had the flocks of less than 100-egg production. On the other hand, the flock owners of the high Leghorn group had $4.83 more cash receipts than did the flock owners of the less-than-100 group. Draw your own conclusions as to whether or not it pays to feed well, have good quality stock, good houses, and equipment.

Note that in every production classification, the receipts were greater for Rocks, Reds, and Wyandottes than for Leghorns. This is due to better prices for cull hens and broilers in case of the American breeds. The total expense per bird was also greater for the American breeds than for the Leghorns in the corresponding production classification. However, there was not so much difference in expenses as there was in cash receipts. This shows rather conclusively that Rocks, Reds, and Wyandottes are more profitable than Leg-

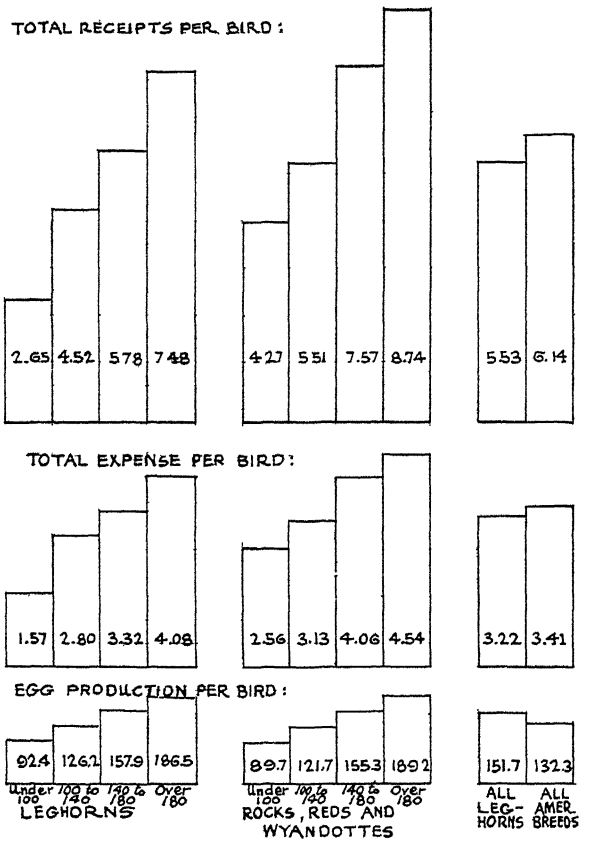

CHART II.—Relation of egg production to cash receipts and expenses

horns with the same egg production. Since the Leghorns averaged 19.4 eggs per bird more than the American breeds there was very little difference in profits based on averages of the two groups.

RELATION OF EGG PRODUCTION TO FEED COST AND LABOR INCOME PER HEN

The largest item of expense in the production of eggs is feed. An average of all of the records shows that feed constituted 70.5 percent of the expense in 1926.

It will be noted in Table 3 that as the egg production increased, the feed

TABLE 3.—*Relation of Egg Production to Feed Cost per Hen and per Dozen Eggs; to Labor Income; and to Inventory*

Egg production classification	Breed classification	No. flocks	Egg prod. per bird	Feed cost		Total expense per bird	Receipts per bird	Profit over feed per bird	Inventory		Labor income per bird based on	
				Hen.	Doz.				Gain per bird	Loss per bird	No. hens beginning year	Average number birds
Over 180.....	Leghorns	36	186.5	$2.70	$0.174	$4.08	$7.48	$4.78	$ .87		$3.26	$4.23
140 to 180....	"	198	157.9	2.32	0.177	3.32	5.78	3.46	.49		2.41	2.98
100 to 140....	"	86	126.2	2.04	0.194	2.80	4.52	2.48	.12		1.45	1.84
Under 100....	"	5	92.4	1.33	0.172	1.57	2.65	1.32		$ .30	.28	.37
Over 180	Amer. breeds	5	189.2	2.98	0.189	4.54	8.74	5.76	1.76		4.55	5.95
140 to 180....	"	51	155.3	2.75	0.213	4.06	7.57	4.82	.61		2.92	4.01
100 to 140....	"	85	121.7	2.26	0.223	3.13	5.51	3.25	.31		2.05	2.65
Under 100....	"	13	89.7	1.74	0.235	2.56	4.27	2.53		.04	1.31	1.67
All flocks.....	Leghorns	325	151.7	2.26	0.178	3.22	5.53	2.27	.41		2.18	2.74
All flocks.....	Amer. breeds	154	132.3	2.39	0.217	3.41	6.14	3.75	.41		2.34	3.08

TABLE 4.—*Relation of Egg Production to Investment, Size of Flock, Culling, and Mortality*

Egg production classification	Breed classification	No. of flocks	Egg prod. per bird based on flock aves.	Average size flock			Per cent reduction in size of flock	Per cent mortality	Investment per bird				Inventory		Labor income per hen based on	
				Ave. No. hens for year	No hens begin. year	No. hens end of year			Houses	Stock	Misc.	Total	Gain per bird	Loss per bird	No. birds beginning of year	Ave. No. birds
Over 100	Leghorns	36	186.5	249	323	120	62.9	11.4	$1.77	$1.38	$0.48	$3.63	$0.87		$3.26	$4.23
140 to 180	"	198	157.9	350	436	185	57.6	10.7	1.42	1.29	0.36	3.07	0.49		2.41	2.98
100 to 140	"	86	126.2	314	396	155	60.9	12.9	1.29	1.15	0.21	2.65	0.12		1.45	1.84
Under 100	"	5	92.4	499	649	343	47.2	18.3	.96	1.07	0.32	2.35		$0.30	.28	.37
Over 180	Amer. breeds	5	189.2	111	146	49	66.4	5.2	.84	1.56	0.12	2.52	1.76		4.55	5.95
140 to 180	"	51	155.3	123	170	53	67.8	6.8	1.70	1.54	.41	3.65	.61		2.92	4.01
100 to 140	"	85	121.7	130	168	75	55.3	10.5	1.66	1.57	.22	3.45	.31		2.05	2.65
Under 100	"	13	89.7	144	183	98	46.4	12.8	1.57	1.58	.19	3.34		.04	1.31	1.67
All flocks	Leghorns	325	151.7	332	417	172	58.8	11.5	1.41	1.26	.33	3.00	.41		2.18	2.74
All flocks	Amer. breeds	154	132.3	128	169	68	59.8	9.3	1.65	1.56	.31	3.52	.41		2.34	3.08

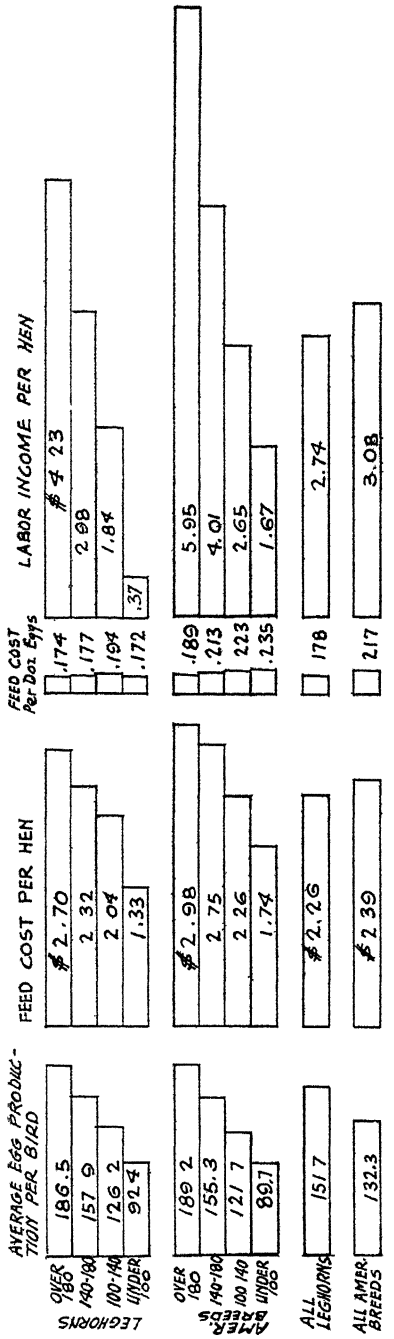

CHART III.—Relation of egg production to feed cost per bird and per dozen eggs; and to labor income

cost per hen and labor income also increased. Since eggs are made from feed, it is only natural that feed costs should increase with increasing egg production. The feed cost per bird was lower than last year due to the fact that grains and grain by-products were lower in price.

In comparing the Leghorns with the American breeds (Rocks, Reds, and Wyandottes), we find that the feed cost was 13 cents less per bird for Leghorns. This was in spite of the fact that the production was 19.4 eggs greater in case of the Leghorns. The feed cost was greater for the American breeds in every production classification than for Leghorns in the same group (Chart III gives these data in graphic form).

In these figures the feed cost of rearing the young stock is included. The feed cost per dozen eggs is therefore higher than the actual cost of feed required to produce the eggs. However, this feed is a legitimate flock expense. Note that although the feed cost per bird increased as the production increased, the feed cost per dozen eggs decreased. The one exception is in case of the five low Leghorn flocks, and there are not enough of these to enable us to draw any conclusion. This brings out the fact quite clearly that we should keep feeding the hens the best we know how in spite of low egg prices, because large food consumption means more eggs and less feed cost per dozen eggs.

The high producing Leghorn flocks had a large gain in inventory, showing that much young stock was raised, thus making the feed cost per dozen eggs greater than it would normally be.

In the American breeds there was a difference of feed cost between the high and low groups of $1.24 per hen, whereas the difference in labor income was $4.28. This shows a handsome return for the money spent on feed. The poultryman need not worry about feed cost if he is using a ration which gives good results and is comparatively economical.

Relation of Egg Production to Size of Flock, Culling, and Mortality

The highest producing flocks in both the Leghorns and the American breeds were the smallest in size of any of the production groups. While not true in every production group, Chart IV shows that there is a general tendency for the size of flocks to increase as the production decreases. This condition is to be expected, for with equal breeding and similar management smaller flocks will no doubt produce the most eggs. In many individual cases, however, the smaller flocks fall down in production because of poorer management which comes as a result of the flock being small and thus not providing an important part of the farm income.

While there is no direct correlation between the egg production and the reduction in the size of the flock, there is a general tendency toward less culling of the flocks as the egg production decreases. The lowest producing groups had a much smaller per cent reduction in the size of flocks than the other groups. This is shown more fully in Table 4. The lower percent reduction in size of flocks may be due to failure of the operator to properly cull, or it may be caused by his inability to raise enough pullets to replenish his flock due to lack of equipment.

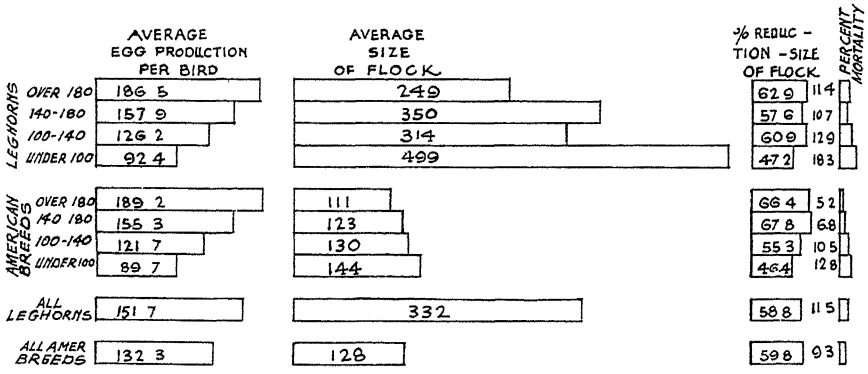

CHART IV.—Relation of egg production to size of flock, per cent mortality, and per cent reduction in size of flock

The chart shows that the high producing flocks did not necessarily make their record as a result of extremely heavy culling, for some of the lower producing groups culled an equal amount. However, owners of the high producing flocks undoubtedly cull and sell their hens earlier in the summer when they can first detect the non-layers, and thus maintain a high egg production, while the owners of the low producing flocks probably carry a number of culls through the summer months and only cull the flocks late in the fall. Timely and persistent culling is an important item in maintaining high summer production.

There is practically a direct correlation between egg production and mortality as indicated by Chart IV, which shows clearly that as the production decreases the mortality increases. This fact is contrary to the general belief of farmers and poultrymen that high egg production is only obtained at the expense of the health of the flock. These data establish beyond a doubt the fact that there are other things controlling mortality, which are apparently much more important than heavy egg production.

Inability to grow vigorous, healthy pullets is undoubtedly a big factor contributing to heavy mortality and low egg production. The chart shows that the American breed flocks are much smaller in size than the Leghorn flocks. The American breeds are very popular for farm flocks, but as the size of flocks increases there is a general tendency to keep Leghorns.

The heavier mortality of the Leghorns can only be explained by the fact that they are kept in large size flocks, which usually means greater mortality.

Relation of Egg Production to Investment and Gain or Loss in Inventory

With the exception of the small number of flocks in the high producing group of the American breeds there is a direct correlation between the egg production per bird and the investment per bird as shown on Chart V. Other things being equal, this direct relation of egg production to investment indicates that good stock and good houses and equipment result in better production and greater profits. Turning to Table 4 on page 7, the analyses of the investment in houses, stock, and equipment show that with the Leghorns each item had a definite relationship with egg production, but that in the American breeds no correlation existed.

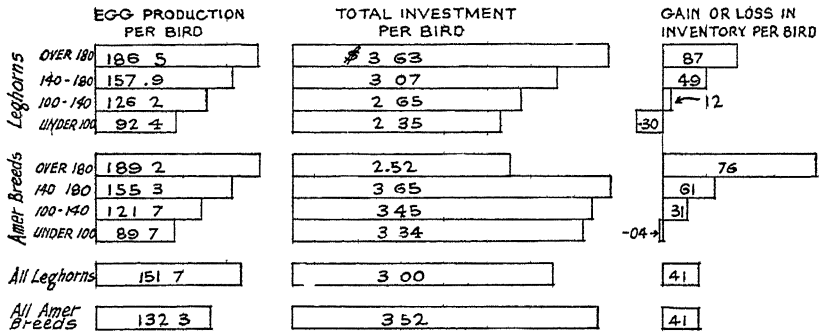

Chart V —Relation of egg production to investment and gain or loss in inventory

There is a very striking correlation between egg production per bird and gain in inventory as shown in Chart V. As the egg production decreases the gain in inventory decreases, and in the low production group of both the Leghorns and American breeds there was an actual loss in inventory.

This condition may be logically explained by saying that the cooperators are following the conclusions taught by their records, namely, that those capable of getting a high egg production per bird are making profits and are justified in spending more money for expansion, while those who find it impossible to get a high egg production are not finding the business very profitable and are not expanding.

Gain in inventory is invariably due to the raising of more young stock than was raised the previous year, although occasionally a new house is built to house the same size flock. Cost of the chicks, fuel, etc., needed in rearing the extra chicks is recorded in expenses other than feed, so that the cost of rearing the young stock was less than its value at the end of the year, resulting in a gain in inventory.

Table 4 indicates in general that those with the better equipment, and hence greater investment, get the better results, and that the business is being expanded only when profits warrant expansion.

LABOR INCOME

Labor income means net profit, or all receipts plus any increase in inventory, minus all expenses and any decrease in inventory. In other words, labor income is the amount of money received as compensation for labor in caring for the flock. Receipts include sales from eggs, cull hens, broilers, hatching eggs, breeding stock, etc. Expenses include feed, baby chicks purchased, brooding equipment, fuel, buildings, breeding stock, interest on investment, taxes, and insurance.

Relation of Labor Income to Receipts and Expenses

Chart VI shows that total expenses, cash receipts, and labor income per bird all increase as egg production increases. Although the total expense per bird is greater for the high producing flocks, the expense per dozen eggs is less than for the flocks with a low egg production.

The figures show that the high labor income for the high producing flocks is the result of an increase in receipts rather than lowering the expense per bird. (This is shown more in detail in Table 3.) The expenses were greater for the high flocks because of the fact that they consumed more feed, and their other expenses were also higher.

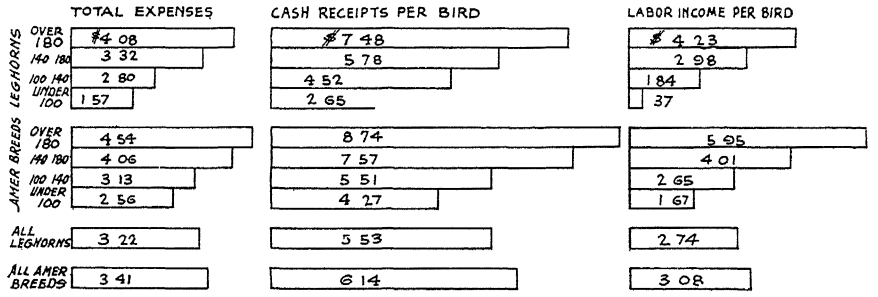

Chart VI.—Relation of labor income to receipts and expenses

The question concerning expenses should be, whether or not they result in a greater labor income. The difference in expense between the high and low groups in the Leghorns was $2.51, which resulted in an increase of $4.83 in receipts, and $3.86 in labor income. Large profits are made by investing money to good advantage, and this certainly is true in the poultry business. Most Ohio farmers could profitably invest more money in their poultry business.

Labor Returns Per Hour

No records were kept on these demonstration farms of the labor requirement necessary to handle the poultry flocks. However, figures taken from similar records by the University of Maine show that it takes 4.1 hours of labor to take care of a hen one year in flocks of from 100 to 400-bird size. It is, therefore, probably safe to estimate that it takes that much labor for the average demonstration farm flock in Ohio.

Figuring 4.1 hours of labor as the requirement to handle one hen a year, we find that the flock owners in the Leghorns with less than 100-egg pro-

duction per bird made only $0.09 per hour, while the owners of the 180 or better group made $1.03 per hour. Similar figures could be estimated for the other production groups.

BREED COMPARISONS

"Which is the best breed?" This is one question which is much discussed and the discussion often results in argument. Tables 5 and 6 should throw some light on this question, since they show the relation of breed with the following factors: Egg production per hen, size of flock, reduction in size of flock, mortality, labor income, total receipts, feed cost per hen and per dozen eggs, and investment per bird.

Because of the desirability of having the results on several flocks in order to justify conclusions, the only averages used were those for the four main breeds: Leghorns, Plymouth Rocks, Rhode Island Reds, Wyandottes, and more than one breed. Table 5 shows that the Leghorn flocks constituted 59.8% of all those reporting, and the average size of Leghorn flocks was larger than for any other breed. This indicates that Leghorns are more adaptable to large flocks.

The Leghorns averaged 13.9 eggs more per bird than any other breed; this bears out the contention that Leghorns are better egg producers than other breeds. There are exceptions, however, as some of the lowest producing flocks were Leghorns. There was little difference in egg production among the three American breeds, although the Wyandottes averaged 7.2 eggs more per bird than the Plymouth Rocks.

There was no appreciable difference in the reduction in size of flocks among the different breeds. The mortality was greater for the Leghorns than for any other breed. The average size of the Leghorn flocks was greater than for the other breeds, and this probably explains the increased mortality.

Table 6 shows that total cash receipts were less for the Leghorns than for any of the other breeds. This is true in spite of the higher egg production for Leghorns, and is largely due to increased meat receipts from hens and broilers for the American breeds.

Total expenses per bird were slightly higher for the three American breeds. This tended to balance the labor income so that it was quite similar for the four breeds. With only 59 cents difference between the high and the low in labor income (see Table 6) it is apparent that there is no practical difference in the profitableness of these four main breeds. The great difference comes in strains of the different breeds. There are high and low producing strains in all of the common breeds.

An answer to the question, "Which is the best breed," cannot be given in a few words. There are several things to consider, and probably the most important of all is the individual whim of the farmer. One thing that should be considered in selecting a breed is the fact that it is easier to obtain a good strain in the more common breeds than in the rare breeds.

MONTHLY ANALYSIS OF EGG PRODUCTION AND MORTALITY

Table 7 shows the average egg production per hen by months for the past three years on all flocks, and the monthly average on the high and low flocks for the past year, together with the standard of 160 eggs per hen for the year.

TABLE 5.—*Breed Comparisons in Relation to Egg Production, Size of Flock, Reduction in Size of Flock and Mortality*

Breed classification	No. flocks	Total No. birds	Egg production per bird	Average size flock			Per cent reduction in size of flock	Per cent mortality
				Ave. No. hens for year	Ave. No. beginning of year	Ave. No. end of year		
Leghorns	325	107,915	151.7	332	417	172	58.8	11.5
Two Breeds	49	10,420	141.7	213	277	104	62.5	10.2
Wyandottes	30	3,384	137.8	113	153	64	58.2	07.6
Rhode Island Reds	45	6,128	131.9	136	172	66	61.6	08.3
Plymouth Rocks	79	10,334	130.6	130	174	72	58.6	10.5
Average of 5 classifications above, 528 flocks totaling 138,181 birds			145.1	261	331	135	59.2	11.1
Average of all breeds, including 15 unclassified flocks, totaling 140,887 birds			144.7	259	329	135	59	11.1

TABLE 6.—*Breed Comparisons in Relation to Labor Income, Receipts, Feed Cost, and Investment*

Breed classification	No. flocks	Egg production per hen	Labor income per hen based on		Total cash receipts per hen	Total expenses per hen	Feed cost (includes cost of rearing young)		Investment per hen
			No. beginning year	Average number			Per hen	Per doz.	
Leghorns	325	151.7	$2.18	$2.74	$5.53	$3.22	$2.26	$ .179	$3.00
Two Breeds	49	141.7	2.03	2.64	5.83	3.58	2.51	.213	3.13
Wyandottes	30	137.8	2.45	3.33	6.18	3.30	2.24	.195	3.45
Rhode Island Reds	45	131.9	2.51	3.17	6.32	3.44	2.54	.254	3.61
Plymouth Rocks	79	130.6	2.22	2.95	6.02	3.43	2.35	.216	3.51
Average of 5 classifications above (528 flocks)		145.1	2.20	2.78	5.64	3.28	2.30	.19	3.10
Average all breeds including 15 unclassified flocks, making 543		144.7	2.20	2.78	5.64	3.26	2.30	.191	3.08

During August and September of the past year the average production of all flocks exceeded the 160-egg standard.

TABLE 7.—*Monthly Analysis of Egg Production*

Months	160-egg standard	Egg production per bird				
		1924	1925	1926		
		Average 440 flocks	Average 461 flocks	Average 543 flocks	High flock	Low flock
November	5	5.2	4.9	4.6	5.9	....
December	8	6.5	6.2	7.1	12.8	1.0
January	10	6.7	7.6	8.0	13.4	1.7
February	13	9.6	9.8	10.0	16.4	3.2
March	17	14.6	15.6	15.3	20.3	10.0
April	21	16.7	18.4	17.9	23.5	15.5
May	20	17.2	18.5	16.7	25.4	12.6
June	18	15.6	15.0	16.8	23.7	9.7
July	16	15.7	14.9	15.3	23.6	9.3
August	14	13.3	13.0	14.2	23.8	8.6
September	11	9.9	10.5	12.0	20.4	6.5
October	7	7.2	5.9	6.8	16.7	3.4
Total	160	138.2	140.3	144.7	225.9	81.5

A comparison of the monthly production per bird over the past three years shows quite a seasonal variation, and it would be interesting, indeed, to compare the seasonal variation with a record of climatic conditions.

THE EFFECT OF SIZE OF FLOCK ON EGG PRODUCTION, LABOR INCOME, MORTALITY, ETC.

In order to determine if there was any relationship between the size of the flock and the resulting profits per bird, a rather detailed study was made of the records taken from 325 Leghorn flocks divided into groups according to size.

The flocks were divided into eleven separate groups. The first eight groups had a range of 100 birds each, and the last three groups had a range of 800-1000, 1000-1300, and 1300 and over, respectively.

The grouping of the flocks shows that 75% of the Leghorn flocks were composed of less than 500 birds each.

The result of this analysis is shown in Table No. 8. A study of the table shows:

There apparently is no relation between size of flock and egg production, although it is generally conceded that the smaller sized flocks have the advantage in getting high egg production. However, in practice the larger flocks are probably bred and managed enough better to overcome the disadvantage of size.

The size of flock does seem to affect the mortality and amount of culling, for as the size of flock increases there is a general increase in the per cent mortality, and per cent reduction in size of flock.

The remainder of Table 8 shows that the size of flock has no influence on the investment per bird, receipts per bird, feed cost per bird, total expense per bird, labor income per bird, or increase in inventory per bird. This table is of interest because it shows no direct effect of size of flock on results secured.

TABLE 8.—*Relation of Size of Flock to Egg Production, Labor Income, Reduction in Size of Flock, Mortality, Investment per Bird, Etc.*

Size of flock classification	No. of flocks	Egg prod. per bird	Average size flock			Per cent reduction in size of flock	Per cent mortality	Investment per bird			Gain in inventory based on number of birds beginning of year	Receipts per bird	Feed cost per bird	Total expense per bird	Labor income per bird based on average number of birds
			Ave. No. hens for yr.	No. hens begin. of year	No. hens end of year			Houses	Stock	Misc.					
Under 100 birds	11	150.1	67	79	35	55.7	7.8	1.43	1.17	.20	.07	5.46	2.32	3.56	2.53
100 to 200.....	62	150.9	130	162	93	42.6	11.3	1.52	1.23	.25	.34	5.14	2.03	2.95	2.80
200 to 300.....	72	154.5	206	238	111	53.4	10.9	1.32	1.29	.21	.30	5.46	2.20	3.03	2.82
300 to 400.....	61	148.6	277	342	181	47.0	9.9	1.33	1.19	.20	.38	5.18	2.27	3.10	2.55
400 to 500.....	35	147.1	369	447	191	57.3	11.1	1.07	1.21	.25	.35	5.23	2.07	3.03	2.55
500 to 600.....	25	161.8	432	546	231	57.7	10.0	1.68	1.40	.48	.51	6.21	2.55	3.84	3.10
600 to 700.....	14	151.7	533	647	282	56.5	9.4	1.22	1.14	.28	.34	5.42	2.21	3.00	2.93
700 to 800.....	11	154.7	596	744	286	61.6	12.5	1.62	1.20	.14	.33	5.92	2.16	2.92	3.27
800 to 1000....	12	145.8	709	889	304	65.8	12.2	1.39	1.21	.50	.35	5.36	2.13	2.85	2.59
1000 to 1300....	9	140.1	849	1126	461	59.1	14.6	1.17	1.23	.56	.33	5.71	2.51	3.48	2.67
1300 and over..	10	150.9	1211	1595	644	59.6	14.6	1.79	1.36	.49	.29	5.74	2.39	3.76	2.35

SUMMARY AND CONCLUSIONS

1. The average egg production per hen (based on flock averages) was 144.7 in 1926, as compared to 140.3 in 1925 and 138.2 in 1924.

2. The average size flock in 1926 was 259 hens as compared to 242 in 1925 and 234 in 1924.

3. The average Demonstration Farm owner in 1926 made a labor income of $2.20 per hen, based on the number of hens owned at the beginning of the year, and $2.78 based on the average number of hens for the year. The returns for 1925 were $2.17 and $2.69, and for 1924 were $1.99 and $2.50 respectively, which shows that 1926 was more profitable than 1925 or 1924, despite lower price of eggs.

4. The receipts per bird in 1926 were less than in 1925, but the same is also true of feed cost per bird, so that the resulting labor income of 1926 was greater than 1925.

5. The greater the egg production per hen the greater the cash receipts, expenses, and labor income or net profit per hen.

6. The greater the egg production per hen the greater the feed cost per hen, and the labor income per hen.

7. The heaviest producing flocks were the smallest in size, and there was a gradual increase in size of flock as the egg production diminished.

8. The American breed flocks average much smaller in size than the Leghorns.

9. The higher producing flocks were culled a little more than the low producing flocks. However, the time of culling probably had more to do with the higher egg production than the amount.

10. The higher producing flocks had a lower mortality than the low producing flocks.

11. The greater the egg production the greater the gain in inventory. The lowest producing flocks showed a loss in inventory.

12. Feed cost constituted 70.5% of the total expense.

13. The Leghorns had an average egg production per hen of 151.7, Wyandottes 137.8, Rhode Island Reds 131.9, Plymouth Rocks 130.6. The average egg production per bird for the American breeds was 132.3 as compared with 151.7 for the Leghorns.

14. The average labor income per hen based on the number of hens at the beginning of the year, was $2.18 for Leghorns, $2.51 for Rhode Island Reds, $2.45 for Wyandottes, and $2.22 for Plymouth Rocks. The average labor income per bird for the American breeds was $2.34 as compared with $2.18 for the Leghorns.

15. With but a single exception in a very small group of flocks in the American breeds, the investment per bird decreased as the egg production per bird decreased.

16. The average egg production per bird reached the 160-egg standard in August and September.

17. The analysis of all Leghorn flocks, grouped into eleven classes according to size of flock, showed little or no influence on any of the factors affecting the profits in poultry.